

AMENDMENTS TO THE DRAWINGS

FIGURE 8 has been amended to replace the term "UPC" with "OPC."

Formalized FIGURES 9, 10A-10E, and 11A-11B are submitted.

Revised FIGURE 7 includes the missing reference number mentioned in the specification.

FIGURE 11B also contained an error in that the points on the graph should be labeled 1010, 1012, and 1014 to correspond with those shown in FIGURE 11A.

Replacement drawings are attached.

## REMARKS

The present amendment and request for reconsideration is filed in response to the Office Action mailed November 16, 2006, the period of response having been extended until February 16, 2007.

In the Office Action, the Examiner has requested restriction of the application between Claims 1-5 and 8-12 in Group I and Claims 6, 7, and 13 in Group II. Applicant confirms the election of Claims 1-5 and 8-12. Claims 6, 7, and 13 are withdrawn subject to applicant's right to file related applications on the subject matter of these claims.

The Examiner indicated that the Information Disclosure Statement filed on February 9, 2004, did not properly identify two of the references. Enclosed with this response is a Supplemental Information Disclosure Statement in which the two references are properly identified for the Examiner to consider. Copies of the two references are enclosed. If there are any questions regarding the information disclosure statement, the Examiner is invited to contact applicant's attorney.

The Examiner has also objected to several informalities in the drawings. As requested, applicant has corrected the typographical error in FIGURE 8 and is submitting formalized FIGURES 9, 10A-10E, and 11A-11B. FIGURE 11B also contained an error in that the points on the graph should be labeled 1010, 1012, and 1014 to correspond description in the specification and with the illustration of FIGURE 11A. Additionally, applicant is submitting revised FIGURE 7 to include the missing reference number mentioned in the specification. It is therefore requested that the Examiner approve the drawings for entry into the application.

Finally, the Examiner has objected to the specification because the cross-referenced application mentioned on Page 1, line 6 needed updated patent information. Applicant has amended the specification as requested by the Examiner.

LAW OFFICES OF  
CHRISTENSEN O'CONNOR JOHNSON KINDNESS<sup>PLLC</sup>  
1420 Fifth Avenue  
Suite 2800  
Seattle, Washington 98101  
206.682.8100

Claims 5 and 12 were rejected under 35 U.S.C. § 101 because the claimed invention was not directed to statutory subject matter. In particular, the Examiner states that the computer-readable medium may encompass a wireless or wired communication link which, according to the Examiner, is a carrier wave which fails to fall into a category of invention. Without agreeing with the propriety of the rejection and in order to advance prosecution, Claims 5 and 12 have been amended to recite a computer storage medium including a sequence of program instructions that when executed cause one or more processors or computers to perform the methods of Claims 1-3 or 8. Applicant submits that this claim format is common in computer-implemented inventions and is accepted by the Patent Office. It is therefore requested that the Examiner withdraw the rejection.

Claim 8 was rejected under 35 U.S.C. § 102(e) as being anticipated by Mukherjee, U.S. Patent No. 6,649,309. Applicant respectfully traverses the rejection. Nothing in the Mukherjee reference appears to teach or suggest the method for preparing data that describes the layout of an integrated circuit by: fragmenting polygons that describe structures to be created via photolithography;

performing an initial fragmentation that divides a polygon into a number of edge segments that extend around the perimeter of the polygon;

defining control sites for the edge segments;

computing a simulation of a curvature of an image intensity at a location on a wafer corresponding to a control site in a direction parallel to an edge segment under defined process conditions; and

using the results of the simulation to adjust the fragmentation of the polygon to add fragmentation endpoints in areas where the curvature of the image intensity is greater than a

LAW OFFICES OF  
CHRISTENSEN O'CONNOR JOHNSON KINDNESS<sup>PLLC</sup>  
1420 Fifth Avenue  
Suite 2800  
Seattle, Washington 98101  
206.682.8100

predetermined amount and/or to remove fragmentation endpoints where the curvature of the image intensity is less than a predetermined amount.

The Mukherjee technique replaces shapes having high spatial frequency content with shapes having a low spatial frequency content. Sharp corners are replaced by smoother curves having a smaller radius of curvature with only low frequency components. Shapes of a layout are replaced with curves having a maximum radius of curvature obtained by measuring a test pattern. The maximum radius of curvature of a printed feature is used to create a table of shapes that are used to create an actual mask. See Col. 6, lines 17 – 64. Nothing in the Mukherjee reference teaches or suggests that a calculated image intensity curvature is used to adjust the number of fragmentation endpoints of a polygon by adding fragmentation endpoints in areas where the curvature of the image intensity is greater than a predetermined amount and/or by removing fragmentation endpoints where the curvature of the image intensity curvature is less than a predefined amount. Because at least this aspect of Claim 8 is not taught or suggested by the reference, it is submitted that the rejection is in error.

Claim 1 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Mukherjee in view of Aleshin et al., U.S. Patent No. 6,263,299. Applicant respectfully traverses the rejection. Nothing in the combination of references cited by the Examiner teaches or suggests a method of preparing layout data for the application of optical and process correction by receiving data that represents a layer of an integrated circuit that is defined as a number of polygons, fragmenting a polygon into a number of edge segments by defining a number of fragmentation endpoints that extend around the perimeter of the polygon, defining control sites for the edge segments, computing a simulation of the layout that estimates light intensity values in an area corresponding to a control site of at least one of the edge segments, calculating a curvature of the light intensity in a direction parallel to the at least one edge segment at the control site, and using

LAW OFFICES OF  
CHRISTENSEN O'CONNOR JOHNSON KINDNESS<sup>PLLC</sup>  
1420 Fifth Avenue  
Suite 2800  
Seattle, Washington 98101  
206.682.8100

the curvature of the light intensity to adjust the number of fragmentation endpoints on the perimeter of the polygon. Therefore, it is submitted that the rejection of Claim 1 is in error.

Claims 2-5 and 9-12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Mukherjee as applied to Claims 1 and 8, taken in view of Kamon, U.S. Patent No. 5,815,685. According to the Examiner, Kamon discloses a method wherein the fragmentation of edge segments is performed by increasing the density of the edge segments if the curvature of light intensity calculated for an edge segment is greater than a predetermined threshold as set forth in Claim 19. Applicant respectfully traverses the rejection. Claim 19 of Kamon as cited by the Examiner describes:

"The method according to claim 8, wherein in the step of predicting the size of a transfer pattern, predicting a mask edge is predicted from the projection image by employing a predetermined light intensity as a threshold value."

Upon reviewing Claim 19 and the remainder of the Kamon reference, applicant finds no teaching or suggestion of adjusting the fragmentation of an edge segment if the curvature of light intensity calculated in a direction parallel to the edge segment is greater than a predetermined threshold. It is therefore submitted that a *prima facie* case of obviousness has not been made.

///

///

///

LAW OFFICES OF  
CHRISTENSEN O'CONNOR JOHNSON KINDNESS<sup>PLLC</sup>  
1420 Fifth Avenue  
Suite 2800  
Seattle, Washington 98101  
206.682.8100

In light of the above, it is requested that the Examiner withdraw the rejections and pass this case to issue at the earliest possible date. If the Examiner has any additional questions regarding the application, he is invited to call applicant's attorney at the number listed below.

Respectfully submitted,

CHRISTENSEN O'CONNOR  
JOHNSON KINDNESS<sup>PLLC</sup>



Rodney C. Tullett  
Registration No. 34,034  
Direct Dial No. 206.695.1730

I hereby certify that this correspondence is being deposited with the U.S. Postal Service in a sealed envelope as first-class mail with postage thereon fully prepaid and addressed to Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the below date.

Date: February 8, 2007 Samuel M. Tucker

RCT:pt

LAW OFFICES OF  
CHRISTENSEN O'CONNOR JOHNSON KINDNESS<sup>PLLC</sup>  
1420 Fifth Avenue  
Suite 2800  
Seattle, Washington 98101  
206.682.8100